Appendix E: IMPACT OF LOCAL CALLING AREAS

The following table uses the five density classifications used in Appendix C1 but compares the average price to an estimate of the number of people that can be called.   We estimate the number of people that can be called by adding together the population and the number of employees that are located within the local calling area of each wire center.

Percent of the population living in urban areas	Number of Wire Centers	Average price of flat-rate residential service + SLC + FUSF	Number of residents + employees in calling area	People who can be called for dollar of price	Natural log of people who can be called for dollar of price
	(a)	(b)	(c)	(d) = (c)/(b)	(e) = ln (c)/(b)
0	1,808	21.00	200,850	9,564	0.58
0-20%	3,979	20.81	672,781	32,325	0.64
20-40%	545	20.47	645,037	31,507	0.65
40-60%	1,057	20.42	896,842	43,914	0.67
60-80%	1,393	20.34	775,582	38,132	0.67
80-100%	4,278	19.40	2,924,367	150,715	0.77
100%	1,092	19.57	4,624,126	236,246	0.78
Sample avg. (0-100%)	11,252	19.63	2,454,104	125,001	0.75

The fourth column is a measure of the potential benefit from subscribing to flat-rate residential service, showing that consumers in urban areas can reach almost 25 times as many people per dollar as folks in the least urbanized area.

This column provides a measure of the value of local telephone service. Arguably, however, the numerator in this calculation is overstated because no recognition is made of the diminishing benefit of being able to reach certain places or people. For example, a customer in a city has a need to reach a few dry cleaners, but not 100. Therefore, the fifth column adjusts for

diminishing returns by taking the natural logarithm of the number of reachable people. The natural logarithm function is concave and therefore it is a mathematical method for representing diminishing benefits from the extended calling area.

This table shows that after controlling for diminishing benefits from the wider calling area, it is still the case that subscribers in urban areas are getting a much better deal than people in rural areas.

The prior table may overstate the benefit of the larger calling area because some people will be counted twice—first as a resident and then as an employee. We do not think this is a problem because there is a benefit from being able to reach someone at either location. Nevertheless, the following table is identical to the prior table with the exception that we have eliminated the number of employees within the local calling area of each wire center.

Percent of the population living in urban areas	Number of Wire Centers	Average price of flat-rate residential service + SLC + FUSF	Number of residents	People who can be called for dollar of price	Natural log of people who can be called for dollar of price
	(a)	(b)	(c)	(d) = (c) / (b)	(e) = ln(c) / (b)
0	1,808	21.00	139,209	6,629	0.56
0-20%	3,979	20.81	276,378	13,279	0.60
20-40%	545	20.47	457,842	22,363	0.64
40-60%	1,057	20.42	601,439	29,449	0.65
60-80%	1,393	20.34	521,422	25,636	0.65
80-100%	4,278	19.40	1,954,070	100,708	0.75
100%	1,092	19.57	3,096,976	158,224	0.76
Sample avg. (0-100%)	11,252	19.63	1,640,720	83,571	0.73

The estimate of people that can be called under a basic calling plan was made utilizing the wire center census data and NPA/NXX counts derived from the same commercial product that the rate data was derived from (see Appendix C). The first step in the process involved calculating the total number of NPA/NXX combinations reachable at terminating CLLI codes by calls placed from originating CLLI codes under the basic calling plans prevailing in the originating CLLI codes. Next the total number of NPA/NXX combinations available at each terminating CLLI code was calculated. Finally, the ratio of reachable NPA/NXX's to the total number of NPA/NXX's for each terminating CLLI code was calculated; this provided a proxy for estimating the percent of a terminating CLLI code's population reachable under a corresponding originating CLLI code's basic calling plan. The results of this operation are illustrated in the table below.

Originating CLLI	Terminating CLLI CD	Percent of Terminating CLLI Reachable Under Residential Basic Calling Plan
BETHMEXADS0	FRBGMEXADS2	25.00%
BETHMEXADS0	ANDVMEXARS1	100.00%
BETHMEXADS0	BETHMEXADS0	100.00%
BETHMEXADS0	BRPNMEXBDS0	100.00%
BETHMEXADS0	HRSNMEYARS1	100.00%
BETHMEXADS0	LCMLMEXARS1	100.00%
BETHMEXADS0	NNWYMEXARSM	100.00%
BETHMEXADS0	RMFRMEHERS1	100.00%
BETHMEXADS0	UPTNMEXARS1	100.00%
BETHMEXADS0	WBTHMEXARS1	100.00%

The ratios in the above table were then applied to the population data at each terminating CLLI code so as to provide an estimate of the population reachable at that CLLI code from the originating CLLI code. As is illustrated in the table below:

Originating CLLI	Terminating CLLI CD	Population Reachable under Residential Basic Local Calling Plan	Households Reachable under Residential Basic Local Calling Plan	Number of Year 2001 Employees Reachable under Residential Basic Local Calling Plan[1]
BETHMEXADS0	ANDVMEXARS1	290.10	123.95	79.23
BETHMEXADS0	BETHMEXADS0	1,555.21	658.25	1,375.74
BETHMEXADS0	BRPNMEXBDS0	1,159.73	465.74	67.19
BETHMEXADS0	FRBGMEXADS2	500.57	210.63	116.48
BETHMEXADS0	HRSNMEYARS1	5,017.38	1,957.17	687.28
BETHMEXADS0	LCMLMEXARS1	401.26	162.66	173.94
BETHMEXADS0	NNWYMEXARSM	1,878.69	778.85	1,280.20
BETHMEXADS0	RMFRMEHERS1	9,529.48	4,171.08	3,806.85
BETHMEXADS0	UPTNMEXARS1	792.39	338.56	97.48
BETHMEXADS0	WBTHMEXARS1	1,319.41	572.61	457.56

These population estimates were then summed for each originating CLLI code, as demonstrated below.

Originating CLLI	Population Reachable under Residential Basic Local Calling Plan	Households Reachable under Residential Basic Local Calling Plan	Number of Year 2001 Employees Reachable under Residential Basic Local Calling Plan
BETHMEXADS0	22,444.23	9,439.51	8,141.95

The monthly recurring rate for basic exchange service obtaining at each CLLI code was derived by taking an average of the basic residential local exchange service rates prevailing at each wire center so as to control for the fact that some wire centers contain NPA/NXX exchanges that are in different rate zones.

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[1] Employee data was estimated from the Census Bureau product; *Zip Code Business Patterns, 2001*. The data contained in this product was matched to zip code boundary data provided with *Maptitude*. This modified zip code boundary data was then overlaid onto the wire center boundary data aggregated to the wire center level in a manner similar to that described for the census data above.